

## Conditions of functional health literacy of an elderly diabetics group

*Condições do letramento funcional em saúde de um grupo de idosos diabéticos*  
*Condiciones de alfabetización funcional en la salud de un grupo de ancianos diabéticos*

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### ABSTRACT

**Objective:** to evaluate the conditions of functional health literacy of an elderly diabetics group. **Method:** cross-sectional and descriptive study, with diabetic's elderly assisted in the SUS (N=114). The social and health conditions were evaluated as well as functional health literacy by *S-TOFHLA* test (short version); the simple proportions, average, standard deviation and Pearson's Chi-square were described by SPSS software (20.0) with  $\alpha=5\%$  value. **Results:** the mean age was 67.4 years, 74.0% of the elderly were women, had up to four years of schooling; 29.8% had a long-standing illness, 64.0% reported having high blood pressure, 47.4% smoke or were smokers, 73.7% had low functional health literacy, which was associated with schooling  $p=0.001$ . **Conclusions:** the low functional health literacy could be a self-care conditioning and can be influenced by low schooling because it implies to have skills to understand and make decisions aimed at self-management of health. **Key words:** Health Literacy; Elderly; Diabetes; Gerontological Nursing, Collective Health.

### RESUMO

**Objetivo:** foi avaliar as condições de letramento funcional em saúde de um grupo de idosos diabéticos. **Método:** estudo seccional e descritivo, com idosos diabéticos assistidos no SUS (N = 114). Avaliaram-se os condicionantes sociais e da saúde, bem como de letramento funcional em saúde pelo teste *S-TOFHLA* (versão-breve); descreveram-se as proporções simples, média, desvio-padrão e teste do Qui-quadrado de Pearson pelo software SPSS (20.0) com valor  $\alpha = 5\%$ . **Resultados:** a média da idade foi 67,4 anos, 74,0% dos idosos eram mulheres, possuíam até 4 anos de escolaridade; 29,8% tinham a doença de longa data, 64,0% relataram ter hipertensão arterial, 47,4% eram ou foram fumantes, 73,7% apresentaram baixo letramento funcional em saúde, que se mostrou associado com a escolaridade  $p=0,001$ . **Conclusões:** o baixo letramento funcional em saúde pode ser condicionante do autocuidado e pode ser influenciado pela baixa escolaridade, pois implica em ter habilidades para compreender e tomar decisões voltadas à autogestão da saúde. **Descritores:** Alfabetização em Saúde; Idoso; Diabetes; Enfermagem Gerontológica, Saúde Coletiva.

### RESUMEN

**Objetivo:** fue evaluar las condiciones de alfabetización funcional en la salud de un grupo de ancianos diabéticos. **Método:** estudio seccional y descriptivo, con ancianos diabéticos asistidos en el SUS (N = 114). Se evaluaron las condicionantes sociales y de la salud, así como de alfabetización funcional en la salud por la prueba *S-TOFHLA* (versión breve); se describieron las proporciones simples, media, desviación estándar y prueba del Chi-cuadrado de Pearson por el software SPSS (20.0) con valor  $\alpha = 5\%$ . **Resultados:** la media de edad fue 67,4 años, 74,0% de los ancianos eran mujeres, poseían hasta 4 años de escolaridad; 29,8% tenían la enfermedad desde hacía mucho tiempo, 64,0% relataron tener hipertensión arterial, 47,4% eran o fueron fumadores, 73,7% presentaron baja alfabetización funcional en salud, que se mostró asociada con la escolaridad  $p=0,001$ .

**Conclusión:** la baja alfabetización funcional en salud puede ser condicionante del autocuidado y puede ser influenciado por la baja escolaridad, pues implica en tener habilidades para comprender y tomar decisiones volcadas a la autogestión de la salud.  
**Palabras clave:** Alfabetización en Salud; Anciano; Diabetes; Enfermería Gerontológica, Salud Colectiva.

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## INTRODUCTION

Functional Health Literacy (FHL) means having the ability to obtain, process and understand the health information and basic services to make appropriate decisions for the management of self-care or in health<sup>(1-2)</sup>. The term "literacy" is a relatively new construct in the context of Brazilian education and, even more, recent in healthcare. The universal descriptor in health sciences refers to *health literacy* as health education or health culture.

Studies about FHL show that it can be one of the ways to promote health in many aspects, associated with attributes such as: skills; capacity; cognition; personal skills; making health decisions; understanding about health; health control; reducing health risks; ability to read, to process the information in health; promote, maintain and improve health in the course of life and interaction with the health system; extract meaning from any type of information and health decisions that benefit the community, about issues such as drug use and alcohol, prevention and treatment of diseases, safety and accident prevention, first aid, emergencies; staying healthy; to perform arithmetic operations concerning the control of medicines, schedules and devices used in treating of some health problems<sup>(3-7)</sup>.

In this sense, promoting health means provide to the population conditions to be able to improve their health and exercise control over the same, as internationally recommended in Ottawa. Thus, for some authors, health is conceived as the possibility of individuals to enjoy life in a positive way, using personal and social resources, as well as physical capacity<sup>(8)</sup>.

Additionally, if the Brazilian population is aging in an accelerated way<sup>(9)</sup>, and with a greater chance to a large portion developing a chronic disease – including the type 2 diabetes *mellitus* (DM2), requiring an adequate control of health and development of individual skills to better face the risks and self-care strategies – the assessment of the impact of FHL may be a factor that contributes to the postponement of disability.

Thus, the gap identified by the topic in health justifies the relevance to performing this research. This assertive arises from the scientific evidence explored in national and international databases on FHL, where it was observed that in Brazil and specifically in the scientific production of nursing, studies to assess this aspect, especially with the elderly, are little known. In the period from 2005 to 2014, they found only two studies performed by nurses in Brazil with elderly (in the South), using an assessment protocol from a Canadian model and qualitative analysis method<sup>(10-11)</sup>.

The FHL is a complex nature theme, multidimensional and interdisciplinary. Among these dimensions, there is the field of Health Education, covering two other major fields of knowledge: Education and Health. The field of education is

delimited by the convergence of knowledge derived, mainly, from the Linguistics and Pedagogy, which are more directly related to education processes and literacy; and Health, by the principles of health promotion, disease prevention, and empowerment of treated subjects<sup>(12)</sup>.

In this context, the FHL become a concept describing the practical implementation of a wide range of cognitive and non-cognitive abilities in real life, rather than a single literacy skill in a clinical setting. FHL health, from this perspective, is the result of intervention and not an independent variable<sup>(13)</sup>.

The World Health Organization (WHO), through the *Commission Determinants of Health*, identified literacy as one of the social determinants of health, because it can contribute to the improvement of the individual's capacity to access, understand, evaluate and communicate the information, and can improve their health, from their families and the community<sup>(14)</sup>.

Also, it is important to consider that the FHL form a complex network of interaction with the health system, the education system, social and cultural factors in which the individual is immersed, with a need to raise the levels of individuals FHL, and the surveys reveal that, in both developed countries and developing countries, there is a large number of illiterate people in this particular context<sup>(15-16)</sup>.

In the US population, for example, nine of ten adults have the possibility to express the lack of ability to manage their health and prevent disease<sup>(14)</sup>. Similarly, research has shown that – in the United Kingdom, in the United States, Australia, and Canada – from 20% to 50% of the population have low competence in FHL<sup>(15)</sup>.

In Brazil, a study was performed with a sample of elderly in the South, to analyze how these elderly seek, understand and share health information that promote self-care. The results of this study showed that the elderly had interests linked to damage prevention strategies, as well as concern with work and family. Most participants reported not to be sufficiently informed about their health condition, and the understanding of the received information was restricted and concerned about diagnosis and treatment. These results lead the authors to suggest that the identification of understanding of health information could support the planning, the implementation and improvement of health education actions with elderly in health primary care services<sup>(11)</sup>.

From a theoretical point of view, in the international literature, some models were found, that discusses the FHL and indicates the possible health benefits of people with adequate literacy. Among them, it is mentioned the proposed by Nutbeam (2000)<sup>(7)</sup>. In this model, the author considers some steps connected to each other for the individual to achieve improved results through healthy choices and opportunities,

including: the prior knowledge and individual skills (fluency in reading, math skills); the ability to have the information, communication and proper health education, development of knowledge and skills; skills in negotiation and self-control; improving literacy levels and changes in behavior and health practices; engagement in social action for health and participation in social norms changes. This sequence of events in this model, then, points out that the FHL is more than the individual being able to read pamphlets and make appointments, but also includes improving access to health information and in their abilities to use them is a critical process empower it.

Thus, starting from the principle that health education and for health is one of the strategies used in the daily nursing work process, and the premise of this study, is that diabetics elderly assisted in primary care network to health, could have the abilities and skills to self-management in health, compromised by low FHL, and aimed to evaluate the FHL in health of an elderly diabetics group as a condition for self-care.

## METHOD

This is an epidemiological, sectional and descriptive study about the FHL of diabetics elderly, assisted at a local health unit of SUS in northern Brazil, Belém (PA), performed from May to August 2014. It was assessed one elderly sample ( $n = 114$ ). This was obtained from the reference population ( $N = 202$ ) of elderly enrolled in the health unit in the period of data collection. To obtain the data, a research instrument was elaborated, consisting of social and demographic conditions (gender, age, living status, schooling, provenience, monthly income, understanding of health information and reading habits in daily life); health (treatment time, comorbidities, complications of the disease, harmful habits to health, such as smoking and alcohol consumption). To evaluate the FHL, we opted for the application of *S-TOFHILA* test, among other existing methods, because this version has already been applied and validated in Brazil. The *S-TOFHILA* in Portuguese means Assessment of Health Education or Literacy, and in this study, the recommendations of studies performed in Brazil were followed, in the states of Ceará and São Paulo<sup>(12,17)</sup>.

For inclusion in the research, it was necessary that the elderly were under treatment for diabetes type II, possessed, at least, one year of schooling, they could read Jaeger Card at level 20/40, considered normal for a peripheral vision with or without corrective lenses or glasses. And also, they heard the Whisper (Whisper Test) of the right and left sides of the ear canal by the whisper test and succeeded adequate score on the Mini-Cog<sup>(18)</sup>, which assesses immediate memory associated with the Clock Drawing Test (CDT), the latter evaluates the executive, vision-spatial and fine motor functions. The tests were used for fast multidimensional assessment, as recommended by the Ministry of Health<sup>(19)</sup>. They were applied to minimize the possible confounding, as recommended by the original test, which can arise from changes in visual, hearing, cognitive or motor functions and interfere with the final result. In this case, as only elderly were evaluated, they could present their functional changes of aging.

About the FHL specific test (*S-TOFHILA*)<sup>(17)</sup>, this consists of two subtests: one assesses the reading comprehension; and the other, mathematics or numeracy. The subtest for reading comprehension consists of phrases about the preparation of an examination of the health routine of the gastrointestinal tract (stomach X-ray), rights and responsibilities about health system and making decisions about their health. These phrases contain 36 gaps, in which the participant must choose from four alternatives words that would give meaning to the phrase, with only one chance to answer. This subtest of reading comprehension should run in 7 minutes; while the part of mathematical understanding in 10 minutes, as recommended by the test after validation in Brazil. However, the examiner does not warn to examine about this time and, when the specified period is reached, the test is collected. Also, in this study, the font size of the text that composes *S-TOFHILA*, was printed in size 14, to facilitate visual accessibility and improve reading by the elderly.

Issues related to mathematics (numeracy) concerns to situations experienced in health, involving marking an appointment, attention, and calculation, such as medications took hours, the result of a laboratory test for blood glucose, and medication dosage. The examiner delivers a card when examined and asks the question about what appears on the card, simulating the consulting card, drug labels, and prescriptions, commonly used by users of primary health care. For the overall score of the test, each correct answer in reading comprehension corresponds to 2 points and, for subtest of numeracy, corresponds to 7 points, obtaining a total of 100 points. The test score is classified as "inadequate", "Marginal or Borderline" and "Adequate" as the obtained score, i.e., 0–55, 56–66 and 67–100, respectively.

Data analysis was performed using the SPSS software (version 20.0), considering the level  $\alpha = 5\%$  and  $p\text{-value} \leq 0.05$ . Univariate analyzes were performed, bivariate and described proportions, average, standard deviation and applied the Pearson Chi-square Test to verify the independence between the variables. The study complied with all ethical principles in research with human beings as the resolution MS/466/2012 and was approved by the Research Ethics Committee of UEPA.

## RESULTS

According to the analyzed variables about social and demographic conditions stratified by the results of FHL test, it was observed that most elderly participants of the study were female, corresponding to 64.0% of the sample. They were in the youngest age group, i.e., between 60 and 69 years, whose average age was 67.4 years; mostly married; had a means of monthly earning and resided mostly in the capital, and 62.4% had between 1 and 4 years of schooling. As for the understanding of health information, 50.0% said they understand them, and have the habit of reading, however, compared to the results of the FHL test, the variables that showed interdependence were the "schooling" and "reading habits" with  $p\text{-value} (\leq 0.05)$ , according to the results described in Table 1.

**Table 1-** Characteristics of elderly who participated in the study, stratified by levels of functional literacy in health, Belém, Pará, Brazil, 2014 (N = 114)

Characteristics	Total (N = 114) n (%)	Functional Health Literacy*			p value*
		Inadequate (n = 84) n (%)	Marginal (n = 12) n (%)	Adequate (n = 18) n (%)	
Age, average (SD)	67.4 (± 5.28)				
Age group (years)					
60-69		49 (58.3)	9 (75.0)	17 (94.4)	
70-79		32 (38.1)	3 (25.0)	1 (5.6)	0.53
80-89		3 (3.6)	0 (0.0)	(0.0)	
Gender					
Female	73 (64.0)	51 (60.7)	6 (50.0)	16 (88.9)	0.44
Male	41 (36.0)	33 (39.3)	6 (50.0)	2 (11.1)	
Marital status					
Married	63 (55.3)	47 (56.0)	6 (50.0)	10 (55.6)	
Single/Widowed/Divorced	51 (44.7)	37 (44.0)	6 (50.0)	8 (44.4)	0.92
Provenience					
Belém	68 (59.6)	45 (53.6)	9 (75.0)	14 (77.8)	0.23
Out of Belém	46 (40.4)	39 (46.5)	3 (25.0)	4 (22.2)	
Mensual Income					
Yes	102 (89.5)	77 (91.7)	10 (83.3)	15 (83.3)	0.44
No	12 (10.5)	7 (8.3)	2 (16.7)	3 (16.7)	
Schooling (years)					
1 to 4	71 (62.3)	59 (70.2)	6 (50.0)	6 (50.0)	
5 to 8	30 (26.3)	22 (26.2)	5 (41.7)	3 (16.7)	
+ 9	13 (11.4)	3 (3.6)	1 (8.3)	9 (50.0)	<b>0.00</b>
Understanding and health guidelines					
Yes	80 (70.2)	57 (67.9)	8 (66.7)	15 (83.3)	0.06
Sometimes	32 (28.1)	27 (32.1)	3 (25.0)	2 (11.1)	
No	2 (1.7)	0 (0.0)	1 (8.3)	1 (5.6)	
Reading Habit					
Yes	58 (50.9)	35 (41.7)	9 (75.0)	14 (77.8)	<b>0.01</b>
Sometimes	42 (36.8)	35 (41.7)	3 (25.0)	4 (22.2)	
No	14 (12.3)	14 (16.7)	0 (0.0)	0 (0.0)	

**Table 2 -** Distribution of health conditions of the elderly who participated in the study, stratified by functional health literacy, Belém, Pará, Brazil, 2014 (N = 114)

Health conditions	Functional Health Literacy*				p* value
	Total (N = 114)	Inadequate (n = 84)	Marginal (n = 12)	Adequate (n = 18)	
	n	n (%)	n (%)	n (%)	
Associated comorbidities					
None	17	16 (19.0)	1 (8.3)	0 (0.0)	0.65
Hypertension	73	51 (60.7)	8 (66.7)	14 (77.8)	
Joint pain	10	6 (7.1)	2 (16.7)	2 (11.0)	
Osteoporosis	9	7 (8.3)	1 (8.3)	1 (5.6)	
Heart diseases	2	2 (2.4)	0 (0.0)	0 (0.0)	
Others	3	2 (2.4)	0 (0.0)	1 (5.6)	
Complications from diabetes					
None	75	52 (61.9)	6 (50.0)	17 (94.4)	0.01
Visual	19	16 (19.0)	2 (16.7)	1 (5.6)	
Renal	12	11 (13.1)	1 (8.3)	0 (0.0)	
Plant sensibility	4	3 (3.6)	1 (8.3)	0 (0.0)	
Amputation of limbs	2	2 (2.4)	0 (0.0)	0 (0.0)	
Plantar ulcer	1	0 (0.0)	1 (8.3)	0 (0.0)	
Associated complications	1	0 (0.0)	1 (8.3)	0 (0.0)	
Smoking or Ex-Smoker					
No	59	43 (51.2)	5 (41.7)	11 (61.1)	0.56
Yes	55	41 (48.8)	7 (58.3)	7 (38.9)	
Alcohol Consumption					
No	94	72 (85.7)	9 (75.0)	13 (72.2)	0.30
Yes	20	12 (14.3)	3 (25.0)	5 (27.8)	

Notes: DM (diabetes mellitus); Applied Test  $\chi^2$ ; p value  $\leq 0.05$

As regards the conditions of health of the elderly in the study, in addition to diabetes, the majority of them reported other diseases, especially arterial hypertension, declared by about 64.0%. Moreover, they were longtime patients, and over 60% reported having suffered no complications arising from the process of evolution of the disease. Other factors also considered important in the study and that may involve health conditions were harmful living habits, such as smoking and alcohol consumption, as described in Table 2.

According to the test performed in this study (Table 3), FHL conditions in about 73.7% proved unsuitable and achieved a general mean of 44.4 points. However, when analyzing the numerical understanding contained in the second part of the test, about 52.6% of the elderly were able to understand and answer the questions, as shown in Table 4.

**Table 3 -** Functional Health Literacy Distribution of elderly participating in the study, Belém, Pará, Brazil, 2014 (N = 114)

Functional Health Literacy	f	%
Inadequate	84	73.7
Marginal	12	10.5
Adequate	18	15.8
Total	114	100.0

Note: points average in the global test (textual and numerical understanding) = 44.4 (SD  $\pm$  19.34).

**Table 4 -** Proportion of answers about the numerical understanding among the elderly in the study, Belém, Pará, Brazil, 2014 (N = 114)

Numerical Literacy	f	%
Hit the four questions	60	52.6
It hit from 2 to questions 3	53	46.5
Do not hit any question	1	0.9
Total	114	100.00

Note: questions: 1. date of the next consultation; 2. the normal glycemic rate; 3. time medication considering the lunchtime; 4. calculate the schedule of a medication every 6 hours.

## DISCUSSION

Social and demographic conditions are considered as one of the dimensions for understanding the FHL<sup>(5)</sup>. In this study, elderly women made up the largest proportion of the studied sample, and this profile is in line with the projection of the Brazilian population of elderly women, which in 2013 corresponded to 55.5%<sup>(9)</sup>.

About the performance of FHL by gender, this study showed no difference but is opposed to a study performed in Ceará, in 506 users of the Unified Health System in Primary Care, in which participants were selected by strata of age<sup>(12)</sup>. In another study performed in the US, using the same test, there was also no difference in FHL levels, comparing the performance between elderly men and women<sup>(20)</sup>. However, it should be emphasized that in the Brazilian study<sup>(12)</sup> not all participants were elderly.

Among the conditions evaluated in this study, the low schooling level is still emphasized, i.e., more than 60% had up to four years of study, which proved to influence the performance of FHL achieved by the elderly ( $p=0.00$ ). This reality seems to impact on aging and health, as demonstrated in a Brazilian research that warns of the following data: 49% of the elderly population is considered functionally illiterate, and of this total, 23% of respondents declare unknowing reading and writing, 22% of the elderly consider reading and writing painful activities, whether by learning disabilities, health problems, or both reasons<sup>(21)</sup>.

The elderly of this study showed difficulty when they have to read the whole sentence, understand it in context and identify which word was completing its meaning, and at the same time have an understanding of what the relationship with the sequence of text. About this issue, it noted, according to the Brazilian survey<sup>(22)</sup> (INAF, 2012) as well as international surveys, that people who have not completed the fifth grade of elementary school are considered functionally illiterate. And, according to the same survey, it was expected that the groups that concluded elementary school had dominance of basic skills of literacy. Other work showed that not always the level of schooling ensures the expected literacy skill level<sup>(22)</sup>.

In Brazil, as the Functional Illiteracy Indicator (INAF)<sup>(22)</sup>, this classifies the Brazilian population into two categories: Functional Illiterate and Literate Functionally. As Functional Illiterate were grouped the absolute and rudimentary illiterate; and those with basic and full level of literacy, as Functionally Literate. This means that the classification at the basic level gives the subject the ability to read and understand texts of medium length; find information, even if it is necessary to make minor inferences; read millions numbers; solve problems involving a single sequence of operations and have a notion of proportionality. But, these people have limitations when they have to settle operations involving a larger number of elements, steps or relationships.

With regard to having full level of literacy, according to INAF<sup>(22)</sup>, are those with skills for understanding/interpretation of unusual situations, because they can read longer texts; analyze/relate the parts of the texts; compare and assess information; distinguish opinion facts; making inferences/synthesis; solve math problems that require more planning/control; understand percentages/proportions/area calculation; interpret double entry tables, maps and graphs<sup>(22)</sup>.

In the present study, elderly who could be classified in Functionally Literate category were those with adequate literacy and who reported habit of reading, but these represented a smaller proportion compared to those classified with inadequate literacy ( $p=0.01$ ).

About health conditions self-reported by elderly, all selected should be in control for DM2. This offense, according to literature, has chronic multisystem nature and brings as one of the main implications, various micro and macrovascular changes, responsible for high rates of morbidity and mortality<sup>(23)</sup>. In this regard, both the micro and macrovascular complications associated with DM2 are significantly reduced through the vigilant glycemic control, lipids, and control of Arterial Hypertension (AH)<sup>(24)</sup>. About the ability to perform this control, there is the low FHL that may hinder this understanding level and being one of the complicating factors that can interfere with the glycemic control and maximize the impact of the disease progression.

Furthermore, in addition to diabetes, the study participants also reported other diseases, leaving them, even more vulnerable to other organic complications. Considering this variable, it was observed that over 64% of them showed, with DM2, arterial hypertension (AH). This offense, as DM2, is a highly prevalent disease among the elderly and determinant of high morbidity and mortality in this population<sup>(25)</sup>; in Brazil, the estimated prevalence is about 65% and may reach 80% among elderly women. So, also track the AH between individuals in a population, according to some researchers, has among other objectives to stratify the risk of overall cardiovascular disease, in addition to injuries to other target organs, affecting, for example, renal function, which may also be compromised when associated with the development of diabetic disease<sup>(26)</sup>.

The low FHL was also associated with some clinical complications already present by diabetic disease in a portion of the elderly. About that point, there was in about 38.1% of participants ( $p=0.01$ ), and among these complications, the most prevalent

was the one related to visual function. About this aspect, in a study of Americans elderly, relating to the variables "inadequate FHL" and "diabetes", there was a statistical association with diabetic retinopathy. Also, blood glucose control was also evaluated, being intimately involved with microvascular alterations<sup>(27)</sup>. Although, in the study here presented, it did not specify which visual problem, this correspondence may serve as a warning to health services such as public health because this complication is very common in the evolution of the disease and may impact greatly on the elderly's ability to read correctly the names of medicines, schedules and other recommendations about health control, especially blood glucose control.

The literature also draws attention to complaints of blurred vision, undervalued in the elderly population, i.e., it is considered as a natural condition among ordinary visual changes in aging. But this clinical symptom, associated with changes in DM2, contributes to functional decline, increasing the risk of falls<sup>(23)</sup>.

Another complicating factor of the disease in this study was the presence of kidney disease in 21.4% of participants, associated with low FHL ( $p=0.01$ ). This result also draws attention because, when the elderly have difficulty for reading and understanding for self-care in the control of blood glucose, there is a possibility of occurrence of major clinical manifestations, because at the increase plasma levels of glucose, can be dehydration, polyuria, polydipsia and weight loss<sup>(23)</sup>.

In this context, it is worth noting the other complications that have been reported in the study by the participants. Even though they have been found in a lesser proportion, are worth mentioning due to the large impact it can cause on everyday activities of the elderly: plantar sensitivity; limb amputations who presented isolated or associated, but are closely related to vascular changes in the course of the disease and may develop into the aortic aneurysm, acute limb ischemia or gangrene<sup>(23)</sup>. Also, participants who reported ever present these complications had low performance in the FHL test.

Overall, the performance in the FHL test applied in this study was "Inadequate" or "Marginal" and if we consider the addition of these two scores, it follows that 84.0% of the sample who participated in the study had difficulty understanding a situation in health writing. This may predict a considerable impact on self-government not only of health but also in other situations of their lives. In a study that evaluated 312 people in São Paulo, about FHL, the authors observed that, among the elderly, these reached a low FHL rate that reached 51.6%<sup>(28)</sup>.

On the other hand, in this study, on issues involving knowledge and mathematical skills, such as schedule medication calculation, blood sugar rate, about 52.6% of the elderly were able to hit all four questions. This result may be explained by the fact that the interviewer asks the question to the elderly about what appears on the card, and this may help to improve their level of understanding. Still about these skills and control of diabetic disease, study with ( $n=383$ ) diabetes (DM2) showed that a poorer blood glucose control was associated with low levels of mathematics or numeracy among participants<sup>(29)</sup>. But even so, it is visible by the results of this study that the reading comprehension was more committed to the applied test, suggesting that how the written information are

delivered to users in the health service, can not be understood by them, or are written in a way that requires higher education, or may also contain words that hinder understanding.

In this context, some studies have reported that health professionals should be alert to identify the FHL in users that have inappropriate behavior in everyday care when: not filling out the forms correctly; often missing the consultations; are not compliant with the treatment; not undergo screening when requested or when asked to take the written information to be read at home; present confusion with name and medication schedules, and may be those situations associated with difficulty in understanding the information by low FHL and this condition not being identified only by self-declaration. Also, the population that has higher chances of having low FHL, the highlights are the elderly, those who receive low wages, the unemployed, people with low education, cognitive, auditory and visual impairment, ethnic minorities groups and immigrants<sup>(29-30)</sup>.

In a Brazilian study<sup>(10,12)</sup> about the FHL, the researchers recommend its assessment of primary health care and the possibility of its inclusion in the agenda of public policies to strengthen health promotion actions, similarly to what happens in developed countries such as the US, Canada, UK, Australia, among others.

Although they have taken every care in the methodological development of the study, also met limitations to generalize the results because it is a cross-sectional study. Also, the possible bias of confounding - as eyesight, hearing, motor and cognitive, some limitations - still need to be considered in this assessment and may have contributed to achieving this result, including the applied test in the study not being specific for the elderly population.

## CONCLUSION

The low FHL among the elderly evaluated in this study was inadequate and remained statistically associated with the level of education. According to the national literacy indicators, this sample was considered functional illiterate, and this may have been one of the main factors conditioning the ability to read and understand health information, both textual and numeric.

It is also inferred that preventive measures by the members of this study, as an annual review of its visual function, could help to improve their reading condition, understanding of information in written health, and thus create to elderly, opportunities for more independence in activities of daily life. On the other hand, about this aspect, it is important to emphasize that there is not always guaranteed access to these specialists in primary care network, and this can serve as a barrier to these elderly can improve their visual function and consequently strengthening their making decisions about their health.

About the assessing ways of FHL in the elderly, studies found in the Brazilian literature does not present a consensus, perhaps because of insufficient scientific production in the area. However, the challenge that presents from this study about strategies aimed at increasing the FHL of this population, because of the demographic trend in Brazil and the negative impact that low FHL can cause on self-care and self-management of health.

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